REMARKS

Claims 1-25, 40, 44-48, and 52-54 are pending and have been rejected. Claims 1, 24, 25, 40, 52, and 54 have been amended. Reconsideration and allowance of Claims 1-25, 40, 44-48, and 52-54 in view of the above amendments and following remarks are respectfully requested.

The Rejection of Claims 1 and 2 Under 35 U.S.C. § 102(b)

Claims 1 and 2 have been rejected under 35 U.S.C. § 102(b) as being anticipated by WO 94/06515, issued to Vladimir Zakhmatov. Withdrawal of the rejection is respectfully requested for the following reasons.

Claim 1 has been amended. As amended, Claim 1 is directed to a fire extinguisher that comprises a tank and a gas generator breech connected to the tank. A hermetically sealed gas generator cartridge is provided within the gas generator breech. The gas generator cartridge comprises a perforated tube containing gas generating propellant inside the cartridge. Claim 2 depends from Claim 1. Claim 2 further requires that the tank comprises a fire suppressant.

The Zakhmatov reference discloses a fire extinguishing device having a cluster of barrels. Each barrel contains a bursting charge 9 and a quantity of the fire extinguishing compound 8 held within an hermetically sealed jacket 7 made of a material which is easily burst by the shock wave produced by the bursting charge.

According to the Examiner, the Zakhmatov device has a tank 7a, a gas generator breech 7b/13/14/15 with a hermetically sealed gas generator cartridge 7b within the gas generator breech, and therefore, anticipates the claimed invention. Applicants respectfully disagree.

The Zakhmatov reference fails to teach an independently hermetically sealed gas generator cartridge apart from the tank. The reference teaches that both the bursting charge 9 and the fire extinguishing compound 8 are in the hermetically sealed jacket 7, and that the bursting charge 9 and the fire extinguishing compound 8 are separated from each other by wads.

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(See the abstract.) Therefore, the bursting charge 9, i.e., the gas generator cartridge 7b according to the Examiner, is not independently hermetically sealed apart from the tank, as required in the claimed invention.

Further, the Zakhmatov reference fails to teach a gas generator cartridge having a perforated tube containing gas generating propellant inside, as required by the claimed invention. In the Zakhmatov device, a bursting charge 9 and the fire extinguishing compound 8 are held within a hermetically sealed jacket 7. The jacket 7 is made of a material which is easily burst by the shock wave produced by the bursting charge. Nowhere does the Zakhmatov reference teach a perforated tube containing gas generating propellant inside the bursting charge 9.

Because the Zakhmatov reference fails to exactly describe the claimed invention, the reference is not anticipatory. Accordingly, the withdrawal of the rejection on this ground is respectfully requested.

The Rejection of Claims 1, 2, 14-20, 40, and 52-54 Under 35 U.S.C. § 102(b)

Claims 1, 2, 14-20, 40, and 52-54 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 2,530,633, issued to Scholz et al. Withdrawal of the rejection is requested for the following reasons.

As noted above, Claim 1 has been amended. Claim 1 is directed to a fire extinguisher. Claim 2 and 14-20 depend from Claim 1.

Claim 40 has been amended. As amended, Claim 40 is directed to a method for making a fire extinguisher. The method includes the steps of installing a hermetically sealed gas generator cartridge in a gas generator breech of a fire extinguisher tank so that the gas generator cartridge exterior is open to the tank interior. The gas generator cartridge includes a perforated tube containing gas generating propellant interior to said cartridge.

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Claim 52 has been amended. As amended, Claim 52 is directed to a fire extinguisher. The fire extinguisher has a tank having a fire suppressant and a gas generator breech connected to the tank. The breech is configured to allow gas passage from the interior of the breech to the interior of the tank. A hermetically sealed gas generator cartridge is provided within said gas generator breech. The gas generator cartridge includes a perforated tube containing gas generating propellant inside the cartridge. Claim 53 depends from Claim 52.

Claim 54 has been amended. As amended, Claim 54 is directed to a fire extinguisher. The fire extinguisher has a tank containing a fire suppressant and a gas generator breach connected to the tank. The gas generator cartridge with the container is configured to burst at a predetermined pressure. The breech does not have a shim or release poppet. The gas generator cartridge includes a perforated tube containing gas generating propellant inside the cartridge.

Support for the amendments can be found throughout the specification as originally filed. See, for example, page 4, lines 16-20; page 11, lines 8-21; FIGURE 1; FIGURE 3; and FIGURE 4.

The Scholz reference relates to a fire extinguisher including a pyrotechnic charge unit to expel a liquid fire extinguishing medium. The Scholz reference discloses that the pyrotechnic charge unit is a hermetically sealed container 5, wherein the container comprises powder grain 6 and a screen 7 above the powder grain 6, and an igniter charge 8 of black powder that is separated from the powder grain 6 by the screen 7. Two electric squibs 9 are inserted in the charge 8 to ignite it. A contact 10 is sealed in the cover of the unit.

The Scholz reference fails to teach a fire extinguisher with the gas generator cartridge having a perforated tube containing gas generating propellant inside. As amended, independent Claims 1, 40, 52, and 54 require that the gas generator cartridge includes a perforated tube containing a gas generating propellant interior to the cartridge. The Scholz reference discloses a

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hermetically sealed pyrotechnic charge having powder grain 6, a screen 7, and an igniter charge 8 that is separated from the powder grain 6 by the screen 7. No where does the reference teach that the pyrotechnic charge comprises a perforated tube containing gas generating propellant, as required by the claimed invention.

Because the Scholz reference does not exactly describe the claimed invention, the reference is not anticipatory. Accordingly, the withdrawal of the rejection on this ground is respectfully requested.

The Rejection of Claims 3-6 Under 35 U.S.C. § 103(a)

Claims 3-6 have been rejected under 35 U.S.C. § 103(a) as being obvious and unpatentable over the combined teaching of the Zakhmatov reference, the Scholz reference, and U.S. Patent No. 5,909,776, issued to Stewart et al. Withdrawal of the rejection is requested for the following reasons.

Claims 3-6 depend from Claim 1. Claim 1 is directed to a fire extinguisher having a tank and a gas generator breech connected to the tank.

The Stewart reference is directed to a linear-type fire extinguisher. The extinguisher is fabricated from a synthetic polymer resin, rupturable upon combustion to release a contained fire extinguisher. The reference discloses that the fire extinguishing composition may be any known fire extinguishing compositions which are fluid under the described super-atmospheric pressure conditions. Further, the reference teaches that the fire extinguisher composition is preferably a perfluorocarbon, hydrochlorofluorocarbon, or hydrofluorocarbon gas.

Regarding Claim 3, admitting that the Zakhmatov reference and the Scholz reference fail to disclose a hydrofluorocarbon fire suppressant, the Examiner states that the Stewart reference discloses a fire extinguisher with a hydrofluorocarbon fire extinguishing composition (Col. 3, line 54.) The Examiner concludes that it would have been obvious to one skilled in the art to

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combine the teachings of the Zakhmatov reference and the Scholz reference with the teaching in the Stewart reference to arrive at the claimed invention. Regarding Claims 4-6, the Examiner is of the opinion that using 1,1,1,2,3,3,3-heptafluoropropane, or water, or water with potassium acetate and surfactant as a fire suppressant would have been obvious to a person skilled in the art because applicants failed to disclose that 1,1,1,2,3,3,3-heptafluoropropane, or water, or water with potassium acetate and surfactant provides an advantage, is used for a particular purpose, or solves a stated problem. Applicants respectfully disagree.

The Stewart reference fails to cure the defect in the teaching of the Zakhmatov reference or the Scholz reference. The amended Claim 1 requires that the gas generator cartridge comprises a perforated tube containing gas generating propellant inside the cartridge. No where does the Stewart reference disclose a gas generator cartridge having a perforated tube in its linear-type fire extinguisher. In addition, none of the cited references disclose or suggest a gas generator cartridge having a perforated tube containing gas generating propellant inside the cartridge.

Because the cited references, either alone or in combination, fail to disclose all the elements of the claimed invention, the claimed invention is not obvious. Accordingly, the withdrawal of the rejection on this ground is respectfully requested.

The Rejection of Claims 10-12, 21, 22, 24, 25, 44, 45, 47, and 48 Under 35 U.S.C. § 103(a)

Claims 10-12, 21, 22, 24, 25, 44, 45, 47, and 48 have been rejected under 35 U.S.C. § 103(a) as being obvious and unpatentable over the combined teaching of the Zakhmatov reference and the Scholz reference. Withdrawal of the rejection is respectfully requested for the following reasons.

As noted above, Claim 1 recites a fire extinguisher having a tank and a gas generator breech connected to the tank. Claims 10-12, 21, and 22 depend from Claim 1. Claim 21

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specifies that the gas generator cartridge has a burst pressure in the range of 500 psig to 4000 psig. Claim 22 specifies that the gas generator breech does not have a burst shim or release poppet.

Claims 24 and 25 have been amended. As amended, Claims 24 and 25 recite a fire extinguisher including a tank and a gas generator breech connected to said tank and that a hermetically sealed gas generator cartridge is provided within said gas generator breech. Claim 24 requires that the gas generator cartridge comprises a precursor of a beverage or food can. Claim 25 requires that the gas generator cartridge comprises a precursor of a soda pop can.

As noted above, Claim 44 is directed to a method for making a fire extinguisher. Claim 45 depends from Claim 44.

Claim 47 is directed to a fire extinguisher including a tank, wherein a hermetically sealed, precursor container of a beverage or food can is provided within said tank. Claim 48 depends from Claim 47.

Admitting that the Zakhmatov reference and the Scholz reference fail to disclose a gas generator container being made of steel, food can, or soda pop can, the Examiner states that it would have been an obvious matter of design choice to a person of ordinary skill in the art to provide the devices disclosed in the Zakhmatov reference and the Scholz reference with the gas generator housing being made of either steel, a food can, or a soda pop can. In addition, the Examiner states that applicants have failed to disclose that steel, a food can, or a soda pop can container provides an advantage, is used for a particular purpose, or solves a stated problem. Regarding Claims 21 and 22, the Examiner states that it would have been an obvious matter of design choice to provide the device of the Zakhmatov reference or the Scholz reference with the gas generator having the burst pressure in a range of 500-4000 psig or with the gas generator without a burst shim or a release poppet. Applicants respectfully disagree.

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For Claims 10-12, 21, and 22 that depend from Claim 1, the Examiner is asked to consider that the perforated tube inside the container of the claimed cartridge provides several advantages. First, the perforated tube has an exterior diameter smaller than the interior diameter of the container (Page 11, lines 9-10.) This allows a space between the perforated tube and the interior wall of the container. This space provides sufficient clearance between the exterior walls of the perforated tube and the interior wall of the container to dissipate the combustion gases. Second, the perforations on the perforated tube provide the even distribution of the combustion gases into the container. Third, the perforations of the tube can be sized to prevent the solid propellant or booster propellant from passing into the space between the tube exterior and the container. Fourth, the space between the perforated tube and the interior wall of the container provides a place to accommodate a permeable stiffening material, which could provide strength to the cartridge walls against the external pressure caused by the fire suppressant.

Neither the Zakhmatov reference nor the Scholz reference teach or suggest a perforated tube as required by Claim 1. In the Scholz device, the pyrotechnic charge unit is a hermetically sealed container 5, wherein the container comprises an igniter charge 8 of black powder that is separated from the powder grain 6 by the screen 7. As shown in Figure 1 of the reference, the powder grain 6 is placed directly in the sealed container 5. Nowhere does the reference disclose a perforated tube being inside the container 5 as required in the claimed invention. Instead, the Scholz reference describes a grid 5a (Figure 2) comprising a piece of *wire* which serves to locate the powder grain 6 and space it slightly from the bottom of the container 5 to facilitate burning of the grain from both ends rather than from the top only and thereby increasing the rate of gas generation. (Col. 1, lines 38-44.) In the Zakhmatov device, a bursting charge 9 and the fire extinguishing compound 8 are both held within a hermetically sealed jacket 7. Nowhere does the reference disclose a perforated tube being inside the sealed jacket 7, as required in the claimed

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invention. Instead, the reference teaches that the bursting charge 9 is separated from the fire extinguishing compound 8 by wads. Therefore, neither the piece of wire 5a disclosed by the Scholz reference nor the wads disclosed by the Zakhmatov reference can attain the advantages of the perforated tube of the claimed invention.

For Claims 24, 25, 44, 45, 47, and 48, neither the Zakhmatov reference nor the Scholz reference teach or suggest using a precursor of a beverage or food can, or a soda pop can as required by Claims 24 and 25. The Scholz reference discloses the pyrotechnic charge unit as a hermetically sealed container 5. The Zakhmatov device discloses a hermetically sealed jacket 7 holding both the bursting charge 9 and the fire extinguishing compound 8. Nowhere does either of the cited references teaches or suggests using a precursor of a beverage or food can or a soda pop can.

Using a precursor of a beverage, food, or soda pop can as the gas generator cartridge is not an obvious matter of design choice. The "obvious matter of design choice" test is applicable to issues involving whether the particular arrangement of parts is obvious, not to the discovery of a new, useful, and nonobvious application for an old product. The "obvious matter of design choice" test for obviousness presumably comes from *In re Kuhle*, 526 F.2d 553, 188 U.S.P.Q. 7 (C.C.P.A. 1976). See M.P.E.P. § 2144.04.VI.C., p. 2100-139, Rev. 5, August 2006. In that case, what was found to be obvious was the mere particular placement of a contact in a conductivity measuring device. In the claims now under examination, the Examiner fails to consider that the claimed invention relates to the discovery that a food or beverage can from a totally unrelated art is used in a novel and nonobvious manner—as a container of a gas generating cartridge. How one could even consider a food or beverage can is an "obvious matter of design choice" for a gas generator cartridge container is beyond all comprehension.

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Contrary to the Examiner's statement, applicants have disclosed that a food can, or a soda pop can container provides an advantage. The Examiner's attention is directed to the advantages discussed in the application at page 9, lines 4-15. On page 9, lines 4-15, applicants describe discovering that precursors to beverage or food cans already come fabricated in suitable materials, such as aluminum and steel, are compatible with the propellant, and the precursor beverage or food cans are of suitable wall thickness that produces the appropriate amount of burst pressure. (Page 9, lines 12-15.) Accordingly, manufacturing costs are saved by using a container manufactured for the food and beverage industry for use as the gas generator cartridge.

For the reasons discussed above, because the cited references, either alone or in combination, fail to disclose all the elements in the claimed invention and further because there is no teaching, suggestion, motivation, or apparent reason to modify the teaching in the cited references according to the claimed invention, the claimed invention is not obvious in view of the cited references. Accordingly, the withdrawal of the rejection is respectfully requested.

The Rejection of Claims 7-9, 13, 23, and 46 Under 35 U.S.C. § 103(a)

Claims 7-9, 13, 23, and 46 have been rejected under 35 U.S.C. § 103(a) as being obvious and unpatentable over the combined teaching of the Zakhmatov reference, the Scholz reference, and U.S. Patent No. 5,465,795, issued to Galbraith et al. Withdrawal of the rejection is requested for the following reasons.

The Galbraith reference is directed to a flame suppressing composition and an apparatus for suppressing a fire. The composition contains a propellant and an effective amount of magnesium carbonate as coolant. The propellants are generally a mixture of a nitrogen rich fuel and an oxidizing agent. The apparatus has a gas generator containing a propellant and a fire suppressant, a tank containing a mixture of water and ice, a first conduit providing a passageway between the gas generator and the tank, and a second conduit providing a passageway between

the tank and the fire. The material for the housing 36 includes aluminum alloys and stainless steel.

The Examiner is of the opinion that a person skilled in the art could combine the teachings from the Zakhmatov reference, the Scholz reference, and the Galbraith reference to arrive at the claimed invention. Applicants respectfully disagree.

Claims 7-9, 13, 23, and 46 depend from Claim 1. The amended Claim 1 requires that the gas generator cartridge comprises a perforated tube containing gas generating propellant inside the cartridge. The teaching of the Galbraith reference does not cure the defect in the teaching of the Zakhmatov reference or the Scholz reference. None of the cited references discloses a gas generator cartridge having a perforated tube containing gas generating propellant inside.

Because the cited references, either alone or in combination, fail to disclose all the elements of the claimed invention, the claimed invention is not obvious. Accordingly, the withdrawal of the rejection on this ground is respectfully requested.

CONCLUSION

Applicants believe that Claims 1-25, 40, 44-48, and 52-54 are in condition for allowance. If any issue remains that may be expeditiously addressed in a telephone interview, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,
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